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AUXILIARIES
TO
MEDICINE:

IN FOUR TRACTS:

Illustrated by Engravings on Wood and Copper.

BY
CHARLES GOWER, M.D.

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS OF LONDON:
PHYSICIAN TO THE MIDDLESEX HOSPITAL: TO THE CLERGY-ORPHAN
CHARITY; AND TO THE REFUGEE FOR THE DESTITUTE.

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1819.

1871

MEDICAL

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Printed by S. Gosnell, Little Queen Street, London.

TO THE HONOURABLE
THE
LORD ROBERT SEYMOUR,

ONE OF THE
Vice-Presidents of the Middlesex Hospital.

MY LORD,

I KNOW not to whom the following Tracts can with more propriety be inscribed, than to Your Lordship, whose zeal is so conspicuous in every undertaking which can alleviate the miseries of mankind.

It is now upwards of eighteen years since I became a medical officer of the Middlesex Hospital, and I have had occasion to remark the assiduity with which

Your Lordship enters into the government of that excellent Charity ; but I am more particularly interested in my feelings by your readiness to enlarge the sphere of action of the Medical Department.

If the publication of this little volume, which contains the essentials of some experiments made within the walls of the Hospital, be really productive of good, I am persuaded of the heartfelt satisfaction it will afford to Your Lordship ; and it will add greatly to the gratification with which I subscribe myself,

Your Lordship's most obliged

And very faithful Servant,

CHARLES GOWER.

No. 17, Old Burlington Street,

St. James's,

March 1, 1819,

AUXILIARIES,

&c.

IT has been justly remarked, that it makes a great difference in the sensations of an author, on his approach into public view, whether the subject of his work be qualified to recommend *itself*, or whether he be obliged strenuously to recommend his subject. For instance, any thing which is new in art or science, having also the valuable recommendation of *utility* to accompany it, will scarcely fail to attract the attention of those who may feel it to be their interest to understand it. But, if nothing is to be related but what was previously known, there will be more than an ordinary share of address required to secure a favourable reception from the world.

Happily, these short tracts, which bear for their title “*Auxiliaries to Medi-*

cine," contain communications which have been found practically beneficial; and however unimportant they may appear to those who are in the enjoyment of health, yet they may be highly grateful to others, who need the assistance which they offer.

In the execution of this undertaking, a main object has been to condense the matter into as short a compass as was consistent with perspicuity; not alone for the reduction of unnecessary bulk, but with the hope of a more extended circulation than could result from a work of higher price.

Where the pages of a book are increased in number, without due regard to the expense which its publication will occasion, the additional cost of paper and printing may defeat the intention of making it *useful*: not to mention the augmented charge which copper-plates, and other graphic illustrations, must unavoidably create.

To those, whose minds are satisfied of the justness of the foregoing observations, any further prefatory matter will appear thoroughly unnecessary.

TRACT THE FIRST.

 AN ACCOUNT OF THE
 SUDATORIUM.

IN the description which is about to be given of a very cheap and portable machine for inducing *perspiration* by a *dry heat*, it may be proper to offer an explanation of its origin, and of the circumstances which have led to its adoption.

Whilst the Writer was on a visit to a friend, his eye was attracted by a curiously-shaped cradle, which was placed in a corner of the apartment, and which claimed a more than ordinary inquiry into its uses and structure. It was stated to be the device of an ingenious American, who was desirous of continuing a custom of sweating himself occasionally, according to the usage of his countrymen, but in a way far more commodious, although precisely on similar principles.

It appears, from the accounts transmitted to us by the various Christian

missionaries who have visited the American portion of the globe, that the Indians, of North as well as South America, are so partial to *sweating*, in every deviation from health, that it is their general resource in all disorders, whether serious or trivial. For which purpose, they construct a species of longitudinal oven, near to their villages, but at a short distance from any dwelling-house, rudely formed of stakes and twigs, and covered with large pieces of green turf. Within this chamber, heated stones, of large dimensions, are placed, previously to the reception of the patient, who afterwards creeps into it in a state of nudity, and the orifice is closed with turf, by the assistance of an attendant. The air within the chamber being soon heated and rarefied, a copious and relieving sweat is induced, which exudes from the whole surface of the body, in drops of an unusual size.

From this rude foundation has originated the simple yet effectual machine which has received the name of *Sudatorium*, and which may now be introduced to the reader by means of an illustrative copper-plate.

Fig. 1.

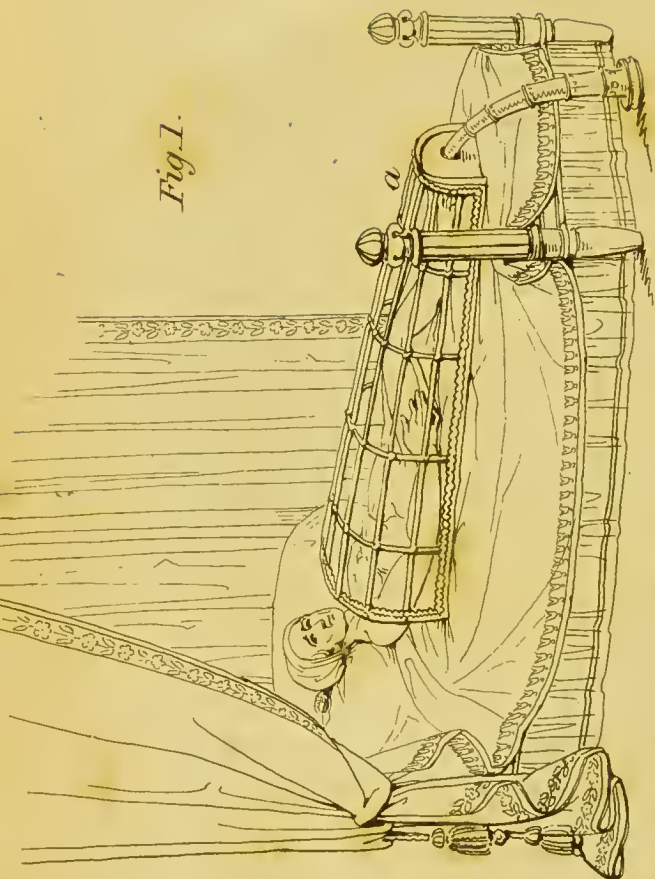


Fig. 2.

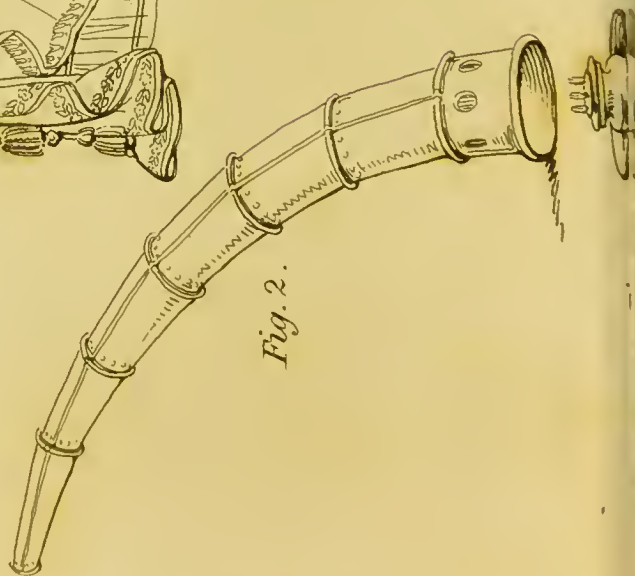
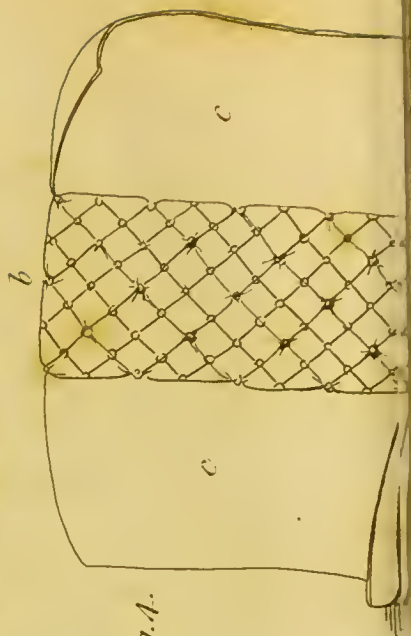


Fig. 4.



THE EXPLANATION

OF

PLATE I.

For the purpose of conveying a clear idea of the machinery, and of the process of *sweating* by means of a *dry heat*, the artist has thought it would be more satisfactory to delineate the patient in due form within the apparatus, by a *general view*, on a part of the plate; and to leave the detail of the several proportions, together with their admeasurements, to another part, and to description. Under these circumstances, it will be the most natural course to support his intentions by a *general description*, in the first instance, and to continue the remaining necessary information by a fuller and more minute statement.

Figure 1 exhibits a *general view* of the *Sudatorium*, prior to the operation of

sweating, which will require some further proceedings on the part of the attendant, to complete its full effect.

The patient is represented lying on the surface of the under sheet of his bed, with his lower extremities stretched at full length, and his arms placed at their ease, on each side of him. Over the surface of the body is a *cradle* of basket-work, which is to form the cavity, or chamber, in which the process of *sweating* is finally to be effected. Towards the feet of the patient, and at the letter *a* at the narrow end of the cradle, a piece of board is fastened, with a circular orifice within it, for the introduction of a *curved tube*, of tin plate-work, to be seen more at large at *Figure 2*, and to be fully treated of in the sequel.

All the necessary preliminaries being thus adjusted, the upper bed-clothes are to be carefully placed over the cradle, and tucked under the bottom edge on which it rests,—leaving the head of the patient at liberty to be withdrawn from the cavity, and allowing the bed-clothes to be folded under the chin, and around the shoulders.

In this state of things, the attendant

has nothing more to do than to pour two ounces, or less, of pure spirit of wine within the *lamp* (*Fig. 3*), and to place it, lighted, under the *curved tube* at the foot of the *cradle*. In the space of a few minutes, the fresh air, which rushes in at certain apertures in the tube, is so heated and rarefied as to pass on rapidly into the cavity of the cradle, where the patient soon feels the warmth, and is shortly afterwards made to exude, plentifully, from every pore.

So far, a *general notion* of the use and potency of this simple contrivance has been endeavoured to be conveyed; but, something more remains to be explained, touching the separate portions of which the machinery is composed.

The *cradle* is made of longitudinal bars of *osier*, placed at the distance of an inch, or more, asunder, and preserved in their situations by occasional cross-bands of basket-work. The shape may be compared to the half of a truncated cone, divided in a direction from the apex to the base; its length being *four feet, four inches*;—its main width, at the base, which

covers the patient's shoulders, *two feet*;— and the smaller end, only *one foot, five inches*. Within the edges of the narrow end is *laced* a thin piece of *board*, by means of young and pliant *oziers*, passed through perforations for that purpose, and worked into the cradle; and a circular orifice is made in the centre of the board, or a little below it, for the admission of the point of the *curved tube*, so that it may be tightly fitted to its diameter*.

Figure 2 is the *curved tube*, composed of sheets of tin-plate, *grooved*, as the workmen term it, but not soldered, to preserve the joints from being separated by the heat of the *burning lamp* (*Fig. 3*). At the larger extremity of the tube, near to the entrance of the lamp, are seen three or four perforations through the tin-plate, about half an inch in diameter, to allow a current of air to rush in, just over the surface of the flame, and thereby to be

* When the *cradle* is not in use, it should be placed upright, on the smallest end, and a piece of twine should be made fast to the wings of the broadest part, to prevent *warping*, which would greatly alter its proper shape.

heated and rarefied. The admeasurement of the tube, in a line from heel to point, is thirty inches; and the main curvature, or arch, is six inches, reckoning from that line: the larger end, at its opening, is three inches in width,—and the smaller is one inch and a half, barely *.

Figure 3 is the *lamp*, which ought to be *grooved* also, and not soldered, as it has an excessive degree of heat to bear. It is represented as having three burners, or wicks; but these are not absolutely necessary; and, indeed, the spirit of wine seems to act with more force without them, besides admitting of a quick and certain extinction, by the aid of a cover, or extinguisher, as soon as the operation is finished †.

* A complete *Sudatorium*, containing a *cradle*, a *curved tube*, a *lamp*, and an *extinguisher*, may be had of Mr. Dedrick Smith, tin-plate-worker, No. 14, Gerard Street, Soho; at a price not exceeding the sum of *Thirty Shillings*.

The same may be had of Moser and Co. No. 52, Frith Street, Soho Square, London.

† The lighted lamp should fit closely to the end of the tube: for which reason, an adjusting block should be placed under the lamp, whenever the bedstead is loftier than ordinary.

By the constant usage of the Sudatorium in the Middlesex Hospital, to which place the Author's friend very liberally allowed him to convey it for the purpose of experiment, the nurses have become extremely ready in the management. They have pointed out some circumstances which require to be obviated; and they have adopted a plan which adds greatly to the perfection of the *sweating*. Their present custom is to let the patient wrap himself within a small blanket, or in flannel, before the cradle is placed over him; and to allow him to take any position which best suits the circumstances under which the nature of his disorder may have placed him. By so doing, they not only add considerably to the comfort of his sensations, but they prevent the inconvenience, not to say the danger, to which too sudden a change of temperature, by evaporation, might expose him.

During the course of the trials which were made, frequently, prior to an *order*

for the purchase of a similar machine, which the Governors, in their anxiety to serve the Charity, most readily granted, the Writer's attention was particularly drawn to the fact of the *lowness of temperature*, at which the most profuse sweating took place; he found it to be fully accomplished at 85 degrees on Fahrenheit's scale; and he has reason to believe, that at a much higher degree, the effect would be rather frustrated than increased, owing to the ardent heat which the patient feels and complains of, without obtaining the relief which *sweating* invariably produces.

Of the circumstances which, it has been before observed, require to be obviated, something may be here advantageously offered. After the operation has been conducted to the due extent, the nurses find it rather difficult to remove the curved tube from its situation. This is owing to the heat, which is constantly passing off into the atmosphere, by the conducting property of the metallic tube; and the neatest, as well as the most effectual, method of correcting it, seems to be, to construct the tube of two sheets of

tin-plate, loosely laid, one over the other, and then *grooved* after the manner of the single tin-plate. These two plates will retain a stratum of air between them, and thereby preserve a non-conducting medium, to cut off the escape of the heat, and thus to save a portion of the spirit of wine*.

The next thing which requires attention is the preservation of the bedding from the effects of a more than ordinary degree of *sweating*. Some patients have exuded so copiously as to cause the fluid to run through bed and sacking; leaving themselves in an uncomfortable state, and checking the continuance of a process which had been purposely brought on.

* Amongst the many useful inventions of the late ingenious Count Rumford, one of the simplest was a double lid to cooking utensils, for the saving of heat within, by cutting off the escape.

Such was the complete preservation of the heat within the boiler, that if the bare hand were placed on a double lid, i. e. two tin-plates instead of one, during the act of boiling, not the slightest sense of heat could be felt.

These double covers were made by a furnishing ironmonger in New Bond Street, of the name of Summers.

To obviate this, the Writer suggests the adoption of a single mattress, made of canvass stuffed with hair (as may be seen delineated in *Plate 1, Figure 4*, at letter *b*), and included in a case made of oiled silk, with the exception of the top, which should be of canvass, for the purpose of warding off any cold sensations which oiled silk would be liable to occasion. This mattress being placed on the surface of a coarse blanket spread on the under-sheet, the patient is to lie on the mattress, wrapped in his own flannel, as heretofore, and the ends of the coarse blanket (see the letters *c. c.* at *Fig. 4, Plate 1*) are to be brought over the cradle, which has now been put over his body, in the usual way. By the intervention of this coarse blanket between the cradle and upper bed-clothes, all the risk of *scorching the linen* is totally removed*.

* With the additional articles which have been just recommended, a perfect Sudatorium would furnish a livelihood for an industrious couple, who might have the address to wait on persons at their own houses, if required, with a complete apparatus.

Amongst the diseases which have been treated by the *auxiliary* power of the *Sudatorium*, within the walls of the Middlesex Hospital, under the care of the Writer, are chronic pains arising from rheumatism, and from exposure to damp situations ;—some eruptive diseases of the skin, of the dry kind ;—and one case of dropsy, where the lower extremities were so stiff and hard as to defy all other attempts to soften them. This latter case terminated successfully, by the usual internal remedies, after the *sweating-process* had been once or twice repeated.

A very *remarkable* account is given by the celebrated Dr. Frederic Hoffman, in the general edition of his works, of a species of *dry bath*, of powerful efficacy, caused by *heated air*, by means of *ignited spirit of wine*. He does not describe the form of such a machine, but he goes on to state its utility in expanding the subcutaneous vessels, and its property of relaxing hard and contracted parts, which, he justly remarks, give it a pre-eminence in diseases of a cold nature, such as para-

lysis, — chronic rheumatism, — and all affections of the skin, of the *dry kind*. He further goes on to state, that it is useful in reducing œdematous tumors; as well as giving relief, in general anasarca of the body.

So close a resemblance does this mode of sweating, mentioned by Hoffman, bear to the Sudatorium, as to lead to the belief that a similar instrument has been formerly employed elsewhere!

TRACT THE SECOND.

THE DESCRIPTION OF AN INSTRUMENT

DENOMINATED A

PULSATOR.

IT has been an established *practice*, traceable from a period as ancient as that of Hippocrates, to give aid to such parts of the human body as are enfeebled or under suffering, by *mechanically propelling the too languid circulation of the fluids*.

Different nations seem to have employed different means for the performance of this salutary custom. By a portion of the inhabitants of India, and by some of those who dwell in parts of the globe discovered by Captain Cook, the principles of the usage are maintained by the well-known process of *champooing*.

And a method, nearly similar, termed *massing*, is stated by Dr. Larrey to prevail amongst the people of modern Egypt. But, to trace the practice further back, and to an age more polished, and more known by the written documents which we possess, there is a whole chapter in the 2d Book of Celsus (*De Medicinâ*), which treats especially upon "*friction*." He mentions, that it is performed by the "*hand*:" and that "inveterate pains of the head are mitigated by the *friction of it* (yet not during their violence); and "any paralytic limb is strengthened by "*rubbing it**."

To adduce a pretty strong proof of the high estimation in which this custom was held by Celsus, he is more than ordinarily strenuous in his desire of giving the invention to its genuine founder:—his expressions, as applied to Asclepiades, who laid claim to the merit of the thing, are—
 "Now, as it is not fit to defraud the moderns of the merit, either of their own

* From Dr. James Grieve's Translation of Cornelius Celsus on Medicine.

“ discoveries, or judicious imitations, *so*
 “ *it is but just* at the same time to assign
 “ those things, which were practised
 “ among some of the ancients, to their
 “ true authors. It cannot indeed be
 “ doubted that Asclepiades has been both
 “ fuller and clearer in his directions, when
 “ and how friction ought to be used; but
 “ he has discovered nothing which was
 “ not comprised in a few words by the
 “ most ancient author Hippocrates, who
 “ said, that *friction*, if violent, hardens
 “ the body;—if gentle, softens it;—if
 “ plentiful, extenuates it;—if moderate,
 “ increases its bulk. From whence it
 “ follows, that it is to be made use of
 “ when a lax body requires to be braced;
 “ or, to soften one that is indurated; or,
 “ to dissipate, where fulness is hurtful; or,
 “ to nourish that which is slender and in-
 “ firm.”

Close attention to the principles on
 which this ancient practice is founded, and
 the consideration of the good effects which
 are experienced from its usage in rheu-
 matic affections, have gradually led to the
 construction of an *instrument*, whereby

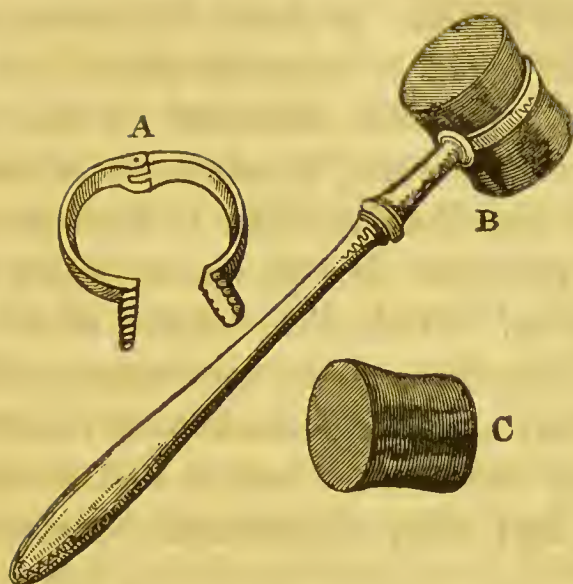
the operation may be effectually conducted, without much previous skill.

Something more may reasonably be expected to arise from the propulsive force of an instrument than from the action of a bare hand. The former partakes of the nature of percussion, and can therefore act on parts which are deeply seated; whilst the latter is confined to friction alone, and is too superficial to remove those pains which afflict the under layer of muscles. And there is a material advantage, moreover, in the power which is granted to the patient to become his own operator; because he can adjust the precise force which he is enabled to bear, and he can also increase the rapidity of the process, proportionate to his sensation of heat, and to the consequent motion of the fluids of the affected part.

From the conjoint effects of such an instrument, and of the dry-bath, mentioned in the former Tract, there is a strong probability of relief being afforded to numerous cases, which have hitherto failed to yield to baths of warm water, to sti-

mulating liniments, and to the repetition even of blisters.

As a proper medium to be employed in the formation of the *Pulsator*, it has been determined to make use of *cork*, not alone on account of the extreme lightness, but for the elasticity, and less consequent tendency to irritate. Some difficulty was at first experienced in giving that due firmness to the handle which the operation required, without depriving the cork of its more valuable properties. If the latter had been perforated for that purpose, it would have been found of too pulverable a nature to admit of a steady pressure; and the effects would have been deficient. Upon reflecting, therefore, on all the possible methods which could be adopted, that *one* has been selected which is here brought before the view of the reader.



*An Explanation of the several Parts of the
Pulsator.*

THE letter C is the *cork*, measuring two inches in depth, and manufactured out of the best Spanish materials. Its diameter is adapted to the diameter of the brass collar A; which being formed of two pieces, united by a hinge, and terminating in a male screw, is readily affixed to its

handle,—taking the general appearance of letter B*.

The handle is made of mahogany, stained black, to resemble ebony: it has a ferrule of brass attached to the end, near to the cork, in which is a female screw, whereby the collar is made to embrace the cork, firmly, and to retain it in its grasp. With the weight of all the parts together, those instruments which have been hitherto made have rarely exceeded two ounces and a half, avoirdupois; and their appearance is extremely neat.

Perhaps it may be desirable by the reader to be informed of the method which was pursued in the formation of the instrument, after various trials. The diameter of a brass collar having been ascertained, out of the mass of them, which were cast in the same mould, an admea-

* One of the most intelligent cork-cutters in the trade, is Mr. J. Bucknall, Senior, of the firm of Bucknall and Sons, No. 5, Crutched Friars, London; from whom much information has been collected, concerning the best mode of forming and polishing the cork, to adapt it exactly to the brass collar of the instrument.

surement by callipers was taken, admitting of a trifling enlargement beyond the precise caliber of the ring. This over-measurement allowed of that nice reduction which the adaptation to the collar demanded, leaving, however, a full pinch upon the cork; and which was gradually performed by a piece of pumice, used after the manner of a fine file, which it greatly exceeded in this case, especially when sharpened occasionally by rubbing one piece of pumice upon another. To this it will be an improvement to add, that if a small hole be drilled in the brass ferrule belonging to the handle, either for the admission of a rivet, or a delicate screw, it will keep the handle firm to its duty,—gripping the cork closely, and preventing its getting loose at any time.

TRACT THE THIRD.

A DESCRIPTION OF THE

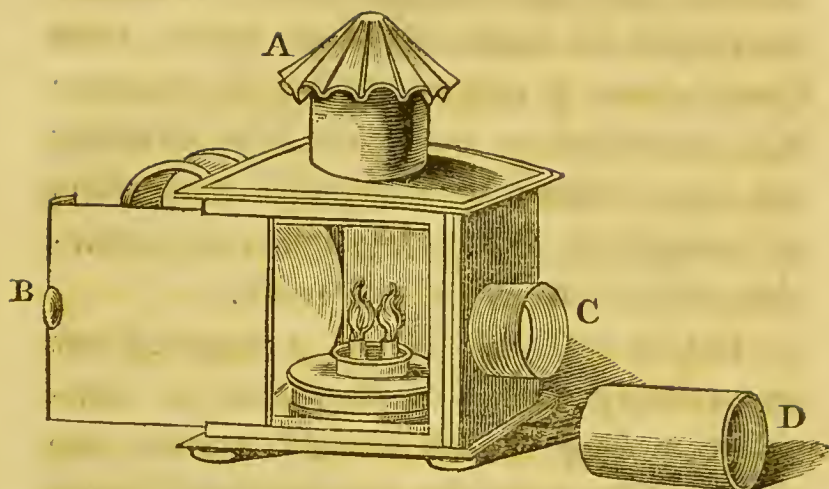
I L L U M I N A T O R.

MEDICAL practitioners are frequently called upon to examine the state of the mouth and fauces of a patient suffering under severe diseases of those parts ; and they are at the same time compelled to view them under great disadvantages. A darkened apartment, either naturally made so, or created by the distress of the patient, claims the aid of artificial light ; and every one conversant with practice must have felt the difficulty, in such a situation, of discriminating nicely between one disease and another. The usual, and indeed the only, method, to which the practitioner has recourse, is to hold a lighted candle

before the open mouth of the sufferer, and to make the best use he can of the time allowed him for the purpose. Whether the candle be made of tallow, which, nine times in ten, it commonly is ; or, whether it be moulded of wax, which is certainly the more agreeable material ; it yet fails of completely answering the very desirable ascertainment of the truth.

In this state of things, it required but an ordinary share of invention to construct a *lamp* which should remove the objections to a candle, and superadd some advantages which that luminary could not naturally grant.

This piece of simple mechanism, which is portable and free from weight, may be not unaptly termed an ILLUMINATOR ; as may be ascertained by the following description of its structure.



*An Explanation of the Wood-engraving
of the Illuminator.*

AN exterior view of this *lantern*, A, exhibits the shape of a wedge, with the point cut off; the back part being formed by the base of the wedge,—of the *width* of *three inches*, and of the *depth* of *three and a half*,—whilst the width of the *front*, in which the tube marked C is affixed, is no more than *two inches*. The area of the sides is *three inches and a half*, square;

and one of the sides, B, is composed of a slide, moving smoothly within grooves at the top and bottom of the lantern. Within the chamber of the instrument is to be seen a lamp, with two wicks, or burners, (to be fed with pure spirit of wine,) the light of which falls on a reflector of polished tin, for the lamp is confined within a given sphere, by means of a rim of tin-plate; and at the bottom of the chamber are four small air-holes. This lamp, which is made to be purposely moveable for the convenience of trimming it, is *two inches in diameter*, and *one in depth*. It is soldered closely together on all sides, with a screwing collet of brass on the top, in which are the two burners and a small hole for the admission of air; resembling the old “*patent agitable lamp*.” The tube C, just now mentioned, which contains a double convex lens within it, is intended to convey the light, already doubled by the reflector, through the additional tube D, (here temporarily removed, to give a view of the lens in C,) with the accumulated force of the concentrated rays, so as to illuminate the mouth,

fauces, and parts beyond them, with the clearness of the meridian sun. The tube ought not, therefore, to exceed the diameter of *one inch and a quarter*, at any rate, lest the light be unnecessarily thrown, in part, on the exterior of the open mouth.

From this statement, it may be easily collected, how far more effectual as well as cleanly is the usage of such an instrument; for, besides the precision which it affords to the eye of the practitioner, it annuls the annoyance from melting tallow, or wax, and allows the patient the chance of sound advice, without exposing him to the vexing flare of a burning candle*.

* See the note at page 9, for the address of the manufacturers and venders of the above and the preceding article.

TRACT THE FOURTH.

AN ACCOUNT OF AN EASY CHAIR,

ENTITLED A

VALETUDINARIAN.

SUCH is the variable state of the human constitution, and such the changes to which the body is liable, that the young and the old are equally involved in the chances of sickness and pain. Whenever these unhappily occur, there needs not a multiplicity of words to introduce to public notice, any means or contrivance whereby ease and cleanliness may be administered to the suffering.

Trifling as some accidents may be estimated, eventually, by a comparison of one with another, yet there is a long cata-

logue of evils, by which the body may be tortured, and from which no prudence will exempt it.

A mere enumeration of some of those complaints which are more frequent, will be the best recommendation to the invention which is the subject of the present Tract ;—such are, acute rheumatism, gout, dislocation, or fracture, of the lower extremities; diseases of the knee, hip or spine; dropsy, asthma, consumption, stone, &c. By the use of the Valetudinarian, all these, and other stages of wretchedness, may be greatly alleviated, by the variation of position which it allows; and which can be changed at will, and re-formed, into as many shapes as the wants of man may require. Our ordinary bedsteads cannot afford the comfort even of *cleanliness*, from the very nature of their structure. In what a distressing situation is that person placed, who, from the loss of sensation in his lower extremities, is bedridden for years, and incapable of assisting himself in any way! Cumbersome, perhaps, in his original formation, and rendered more so by long confinement,

he will require the strength of a stout attendant to remove from under him the loathsome materials in which he has been sleeping. Surrounded thus by difficulties which the protraction of his complaints cannot fail to aggravate, he will rejoice at the discovery of any species of machinery, which can abridge the labour and fatigue of those about him, and produce that personal ease which he had long looked for in vain !

And, now that a representation has been given of the valuable properties which the *Valetudinarian* possesses, it becomes an act of justice to nominate the inventor ; for, although he is a native of another soil, he is entitled to our best thanks, and to our gratitude, for the comfort which he has transported into Britain.

Through the medium of a small tract, in Latin, given to the writer by a friend, the first communication of this invention was received.

A foreign physician of the name of Thaden *, of great ingenuity, having had

* The tract in question bears for its title, “ *Novæ Sellæ Ægrotantium, &c. Descriptio.*” Auctore Ger-

occasion to lament the want of some mechanical contrivance which would give relief to the sick under long confinement, set his genius to work in constructing the machinery which is about to be described in the four following copper-plates. He composed the Latin tract, just mentioned, and published it, for the general service of mankind. How far the well-known excellence of British artisans may be enabled to improve on the original plan, must be left to the test of time. But there is one statement which may be made, without any detraction from the invention itself, viz. that the elegance of the exterior, when combined, and made up into a piece of household furniture, in conformity to the taste of our own modern workmen, *will* surpass the original, in beauty and convenience, as well as compactness of formation. It will give the writer great satisfaction to be informed, that some skilful cabinet-makers have undertaken to construct a “*Valetudinarian*,” with, or with-

hard Friderico Thaden, Med. et Chir. Doctore. Erlangæ, 8vo. 1798.

out, mechanical improvements ; and that they are reaping daily the benefit of their ingenuity and perseverance, which they in general so well deserve.

N. B. The tract itself was too extensive for a work like this ; and the original explanation of the plates was unnecessarily long :—no part of it has been, therefore, retained, but the graphic designs, which have been greatly improved by the British engraver, in their shadows, and in the execution.

THE DESCRIPTION

OF

PLATE II.

PLATE 2, *Fig. 1*, represents a “*Valetu-dinarian*,” or an infirmity-chair; with a suspensory case, for a fractured leg; together with a table; and a square box, for the support of the sound limb.

A, is the *chair*:—to be more particularly described in the subsequent Plates.

B. B, are two upright shafts, of wood, kept firmly perpendicular, by staples of iron, *a. a. a. a.* affixed to the arms and feet of the chair. (See the shapes, *Fig. 2* and *3.*)

The top of each shaft is capped with a square mortice, of iron, for the reception of a sliding transverse beam of bar-iron, C; which is made fast by the thumb-screws, *b. b.*

Fig. 4.

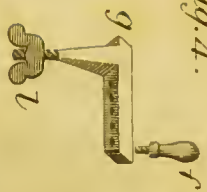


Fig. 1.

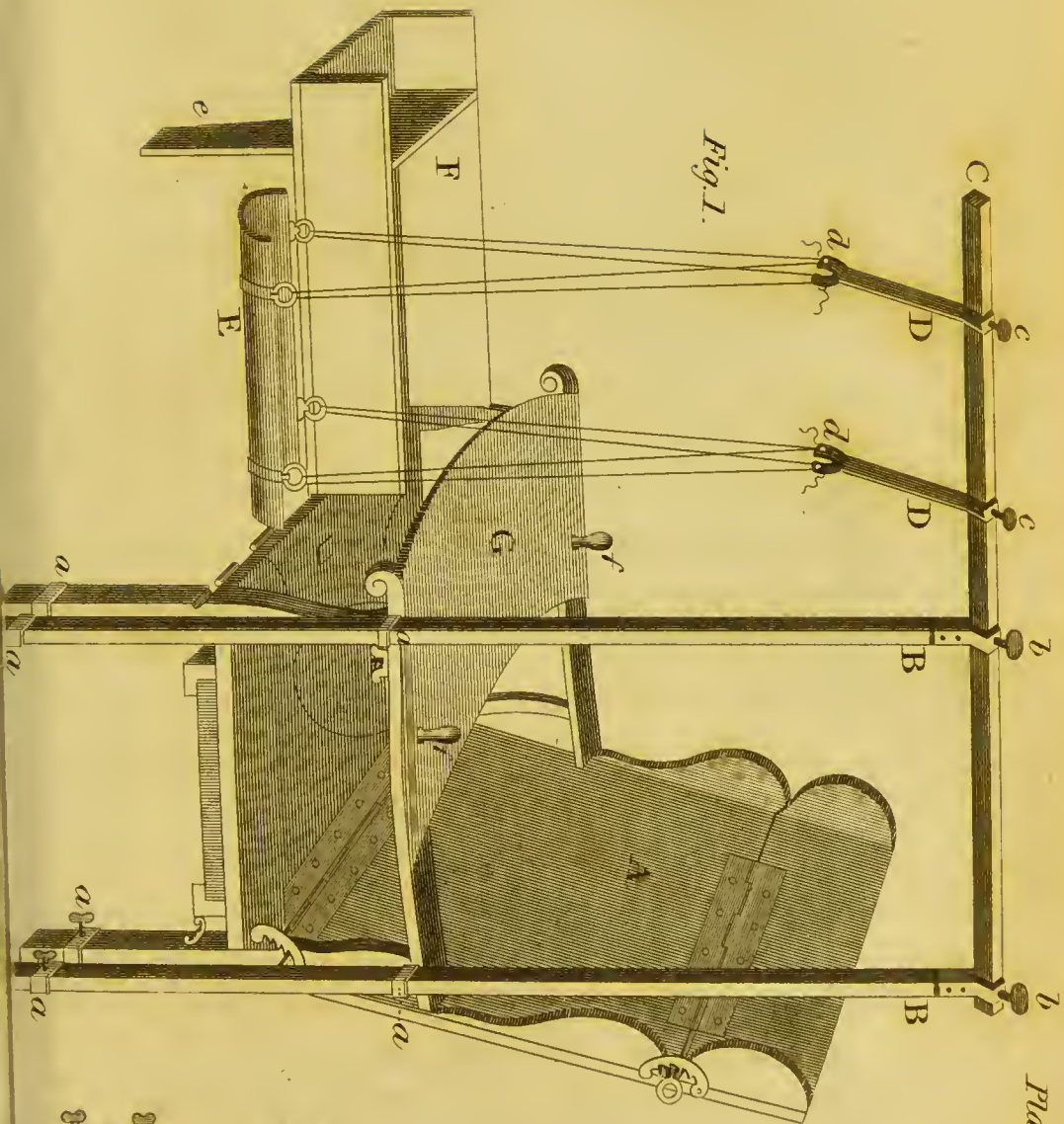
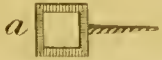


Fig. 3.





D. D, are two light projecting arms, of bar-iron, sliding on the transverse beam C, by means of mortices at their upper extremities, *c. c*, and fastened by thumb-screws. At their lower extremities, *d. d*, are pulleys, through which are cords, traversing, for the purpose of suspending the appendage E, at any required height.

E is a wooden case, of a semi-cylindrical form, strengthened by light ribs of iron, which terminate in loops, for the reception of rings, through which the cords from the pulleys, *d. d*, freely move.

F is a square box, for the support of the sound leg. It is affixed to the front of the chair, by hooks and staples; and it is upheld by the fulcrum *e*. This box can be readily removed, to admit of a temporary passage for the surgeon, on either side of the fractured leg: during which time, the sound leg may be placed upon a footstool.

G is a table, resting upon the arms of the chair, and moveable at will, backward or forward, by the adjusting screw-handles, *f. f*. (See another view of this table, at Plate 4, *Fig. 4.*)

By looking at the iron cramp *g*, *Fig.* 4, of the present plate (Plate 2), a number of holes will be seen, into which the screw-handle *f* may be severally shifted, and the table be fastened at any required distance. The iron cramp *g* is counter-sunk within a groove in the arm of the chair, and made fast by a thumb-screw, *l*, on the under side.

Fig. 2

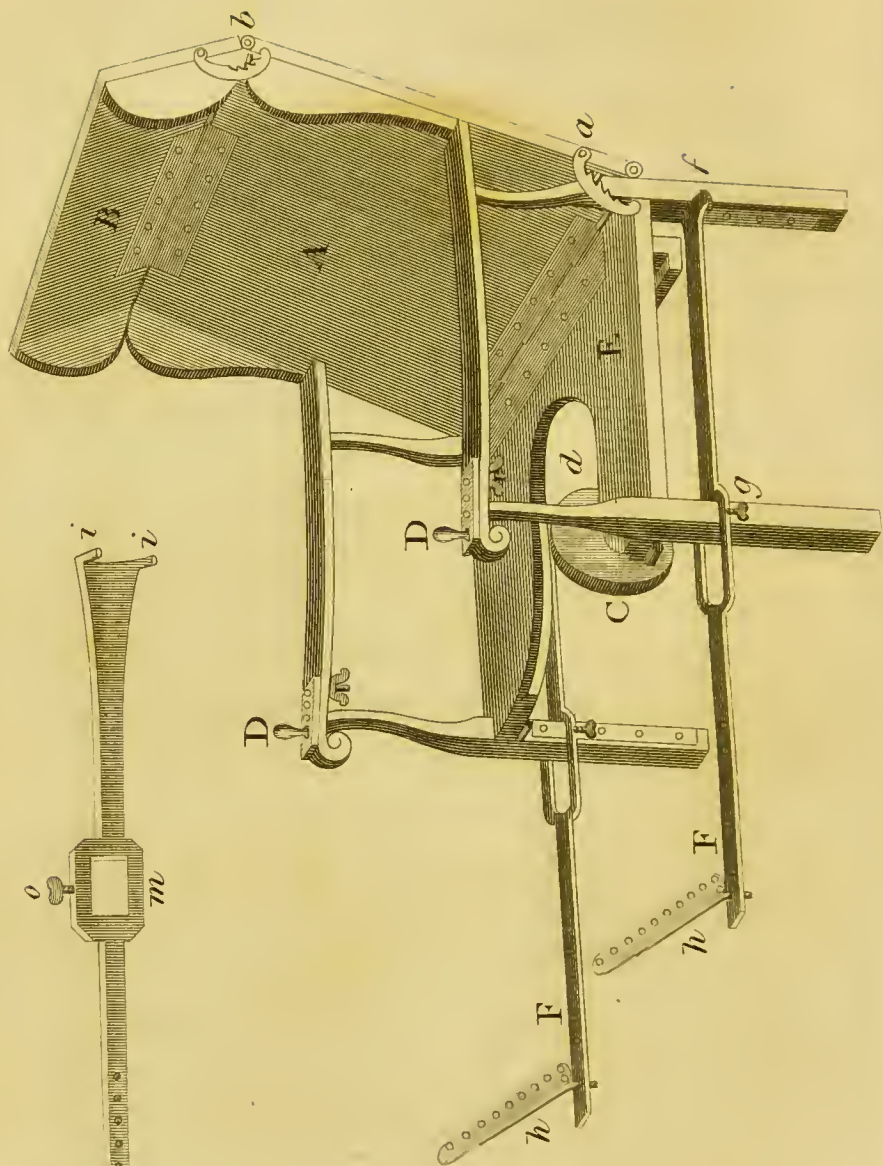
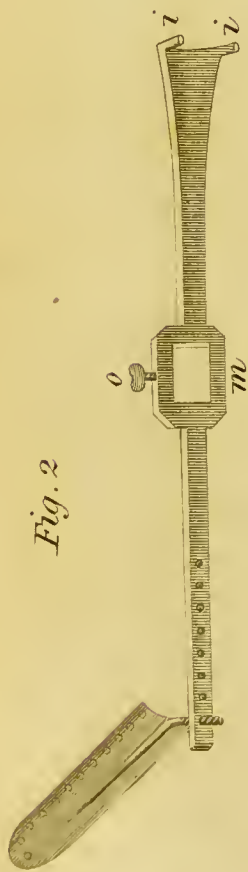


Fig. 1

THE DESCRIPTION

OF

PLATE III.

THE same *chair* is represented in this Plate, as is viewed in Plate 2; with the exception of the apparatus for a fractured leg, &c. which has been removed for the purpose of converting it into an *obstetrical chair*.

A, *Fig. 1*, is the back of the chair, which acts as a prop to the patient; it being capable of inclination to any angle by the serrated iron catch and pin, *a*.

B is the upper portion of the back, so contrived as to be moveable *inwards*, and to be there fastened by its serrated iron catch, and pin, *b*.

C is a circular door, hanging perpendicularly, by gravitation on its hinge; which will close the orifice *d*, in the seat

of the seat E, whenever it is not required to be open for *obstetrical* purposes, or for the introduction of a bed-pan.

D. D. are handles, which the patient may firmly grasp, in the moment of labour. They are the same handles as are seen at *Fig. 4, Plate 2*; but they are *here* screwed into the arms of the chair, *reversely*, so as to place them at the very extremity of the arms.

F. F. are two projecting iron supporters of the legs of the patient: they are adjustable to any length, by the moveable iron foot-stays, *h. h.* If desired, they may be covered with leather, or any other appropriate material; and they may be padded and stuffed.

Fig. 2, in this Plate, gives a clearer view of the mode in which the iron supporters are temporarily fixed to the legs of the chair; where *i. i.* are hooks, fitted to corresponding staples in the posterior leg of the chair at *f*, *Fig. 1*; and where *m* is a loop, receiving the fore leg of the chair, to be made fast by its thumb-screw, *o*; at *g*, *Fig. 1*.

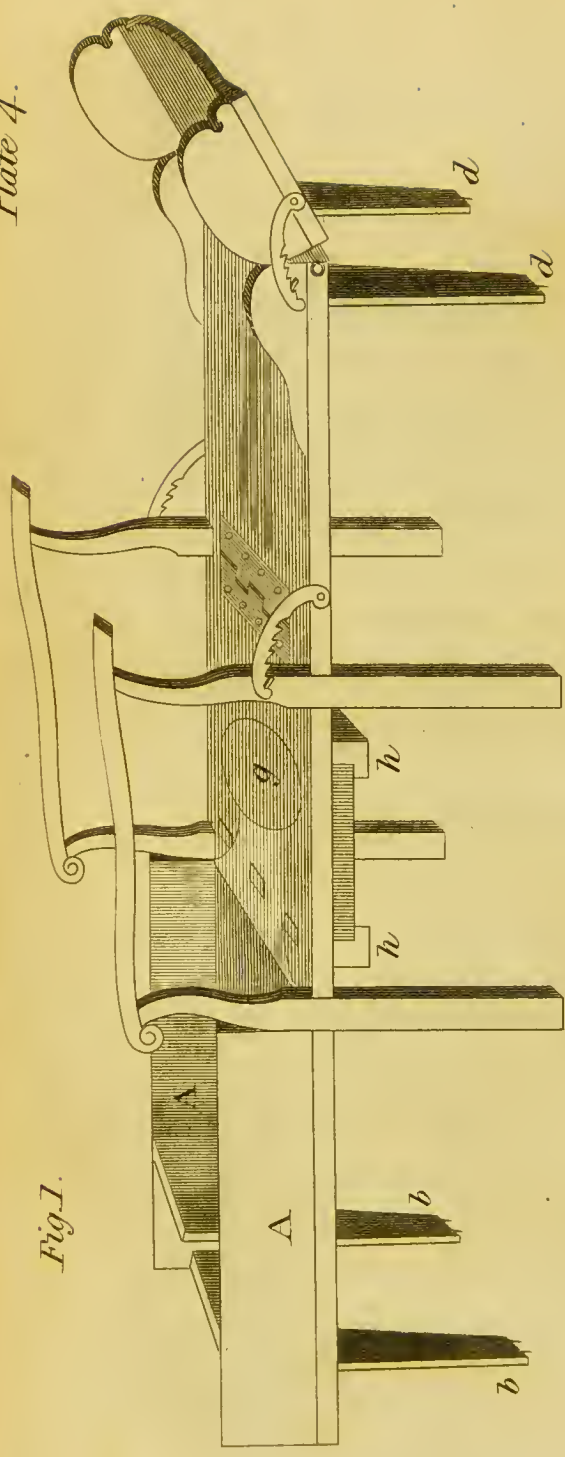


Fig. 1.

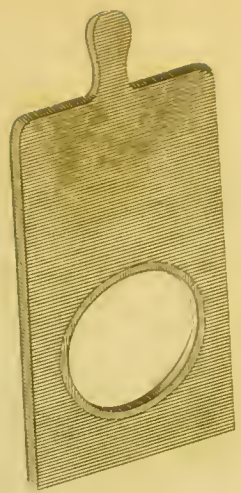


Fig. 2

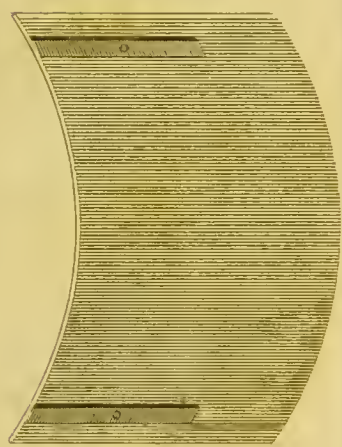


Fig. 3



Fig. 4.

THE DESCRIPTION

OF

PLATE IV.

FIG. 1 is the same chair, made into a couch, or bedstead; and adapted to the reception of a mattress, featherbed, or cushions.

It is capable of being lengthened at the foot, by the addition of two moveable boxes, *A. A.*, with their props, *b. b.*; (see a similar box, at *Plate 2*;) and the back is supported horizontally, by its props, *d. d.* The circular door, at *g*, in the bottom of the chair, is here closed, by the wooden slide in the grooves, *h. h.*, placed underneath; and to be hereafter described, in *Plate 5*.

THE DESCRIPTION

OF

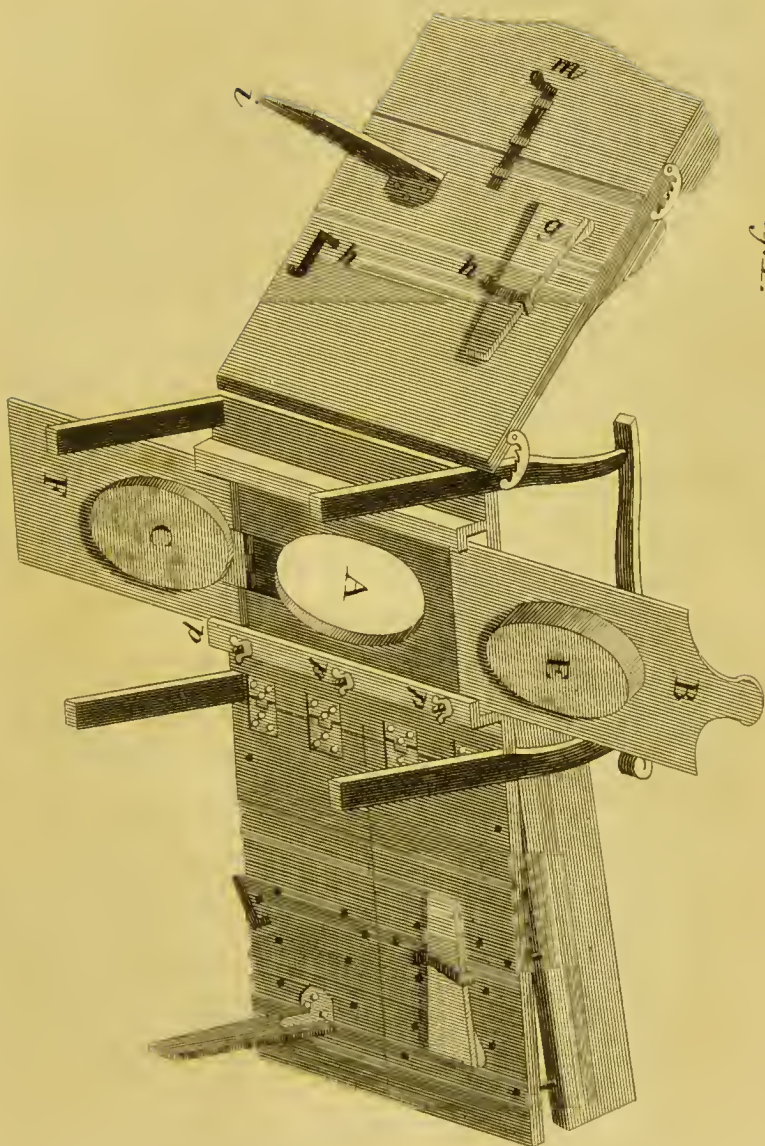
PLATE V.

FIG. 1 gives a representation of those parts of the "*Valetudinarian*," which could not be described in the former Plates, on account of the upright position of the chair. In this view, the construction of the *undermost* parts is more fully seen.

A is a circular orifice, which is closed, usually, by the corresponding circular door, C, but is here purposely turned back upon its hinge, by the removal of its keeper,—the sliding board F.

The same orifice is adapted to the temporary reception of the wooden slide, B, which contains a bed-pan, E, made of tinned-copper.

Fig. 1.





A general idea of the Chair, with its arms and legs, may be collected from what has been already stated ; but, the slides and bed-pan may require a more distinct elucidation, and their form is therefore given separately, at *Fig. 2* and *3*, in *Plate 4*.

Referring again to *Plate 5*, at the letter *g* will be seen a prop to the back of the chair, pressed flat upon its hinge, and fastened by an iron turn-buckle, *h*; whilst another prop, at *i*, is at its full stretch. The moveable portion of the back can be made stiff, by the bolt at *m*.

In the front of the chair are seen the lengthening pieces, or boxes, for the reception of the legs of the patient, which are attached altogether by the thumb-screws, *p. p. p.* passing through the rabbet, or groove, which receives the slides in the bottom. The *lengthening-pieces*, in front, have also their props, similar in their contrivance to those on the back.

The apparatus which has been explained in the four last plates is purposely exhibited without cushions, or covering of any kind, in order that the minutest parts of its structure may be clearly seen.

But, it scarcely needs the observation, that an article which is constructed expressly for the infirm, should have all its angular portions guarded, by means of horse-hair stuffing, within canvass, covered either with leather, or horse-hair cloth. The mattress too, and squabs, which are to form the bedding on which the patient is to lie, should be made of similar materials; preserving ease and warmth, by the elasticity of the stuffing, and allowing of cleanliness by the peculiar property of *hair*, through which all extraneous fluids readily percolate, without leaving a sensation of cold or moisture upon the body of the patient.

In the construction of the mattress, and squabs, care should be taken to divide them into portions which exactly correspond with the several joints and bendings of the apparatus,—having their edges

rounded off at the nick of the joint, to permit the back, &c. to be placed at any required angle. The needful orifice in the bottom cushion should also have a squab, stuffed with horse-hair, of an equal depth with the cushion,—to be fastened by ties of tape to the circular door C, and to be conveyed into the opening A (see *Plate 5*), whenever the bed-pan is removed from under the patient.

Now, it will be readily imagined with what ease the nurse can withdraw and change the linen, &c. from under the patient; and can substitute fresh, by the above orifice, if the succession of sheets and blankets which are undermost have like orifices in their centres. Small pieces of flannel, covered with a clean napkin, can then be placed upon the squab, prior to the closing of the opening A, by the circular door C.

Experience will point out whatever the feelings of the sufferer, or the genius of the nurse, may term desiderata; and the artisan will be enabled to take the advantage of such suggestions, to improve and give perfection to the invention.

DIRECTIONS TO THE BINDER.

Plate 1. to face page 5.

Plate 2. to face page 34.

Plate 3. to face page 37.

Plate 4. to face page 39.

Plate 5. to face page 40.

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